

What is claimed is:

1. A network architecture supporting periodic and aperiodic transmission of data comprising;
a network databus;
a plurality of Network Interface Controller (NIC) modules capable of communicating over said network databus, at least one of said plurality of NIC modules acting as a master timing NIC module configured to assign bandwidth on said network databus for transmission of data, said master timing NIC module including a means of determining what bandwidth is assigned to requests for aperiodic data transmissions based on priority, length and sequence of frames.

2. The network architecture of claim 1 wherein said master timing NIC is configured to guarantee a certain amount of bandwidth for the transmission of aperiodic data.

3. The network architecture of claim 1 wherein said network bus comprises a dual bus structure.

4. The network architecture of Claim 1 further comprising a plurality of network devices communicably coupled to said plurality of NIC modules.

1 5. The network architecture of Claim 1 wherein said master timing NIC
2 modules comprises:

3 a master NIC configured to receive requests for aperiodic data
4 transmissions from one or more of said plurality of network devices; and

5 a priority table for storing a predetermined set of priorities assigned to
6 requests for aperiodic data, said table accessible by said master NIC; and

7 a transceiver means coupled to said master NIC and providing a signal
8 pathway between said master NIC and said network databus.

1 6. The network architecture of Claim 5 wherein said transceiver means
2 comprises:

3 a receive buffer for reading data from said network databus; and

4 a transmit buffer for writing data on said network databus.

5 7. The network architecture of Claim 5 wherein each of said plurality of
6 NIC modules comprises:

7 a NIC configured to receive requests for aperiodic data transmissions
8 from one or more of said plurality of network devices; and

9 a table associated with said NIC for storing a predetermined set of
priorities assigned to requests for aperiodic data, said table accessible by said
master NIC; and

a transceiver means coupled to said master NIC and providing a signal
pathway between said master NIC and said network databus.

1 8. The network architecture of Claim 5 wherein said master NIC is
2 configured to transmit the contents of said priority table to each of said tables
3 associated with each of said plurality of NIC.

Sub 93
A network for transmitting data between network interface controllers in a communications system, said network comprising:

a first network interface controller;

a second network interface controller coupled to said first network interface controller, wherein one of said first and second network interface controller comprises a master timing network interface controller;

a plurality of modules coupled to either of said first and second network interface controllers, wherein said modules are capable of requesting transmission of data; and

a means for prioritizing an order of transmission of said data.

Sub C1
10. The network of Claim 9 wherein said master timing network interface controller includes said means for prioritizing said order of transmission.

11. The network of Claim 9 wherein said means for prioritizing comprises a table, wherein said table comprises prioritization information.

12. The network of Claim 9 wherein data is transmittable from one of said modules to another of said modules through said communication system.

13. The network of Claim 9 wherein said data is aperiodic.

14. The network of Claim 13 wherein said aperiodic data is isochronous, asynchronous, or isochronous and asynchronous.

- 1 15. The network of Claim 13 wherein said aperiodic data from at least one of
2 said modules comprises a bandwidth, wherein said bandwidth is guaranteed
3 transmission throughout said communications system.

Sub 16

1 A network for transmitting data between modules in a communications
2 system, wherein said data comprises periodic data and aperiodic data, said
3 network comprising;
4 a master network interface controller, wherein said master interface
5 controller is capable of prioritizing transmission of said aperiodic data requested
6 by said modules;
7 a first backplane coupled to said master network interface controller;
8 at least one first module coupled to said first backplane, wherein data is
9 transmittable from one of said first modules along said first backplane to other
10 first modules and said master network interface controller;
11 a network databus coupled to said master network interface controller;
12 at least one network interface controller coupled to said network databus;
13 a second backplane coupled to said network interface controller;
14 at least one second module coupled to said second backplane, wherein
15 data is transmittable from one of said second modules along said second
16 backplane to other second modules and said network interface controller; and
17 wherein said first and second modules are capable of requesting
18 transmission of said aperiodic data over said network databus, wherein said
19 requests of transmission are prioritizable by said master network interface
20 controller.

Sub C1

1 17. The network of Claim 16, wherein said aperiodic data comprises
2 isochronous or asynchronous data.

1 18. The network of Claim 16, wherein said master network interface controller
2 comprises a data transmission prioritization table, wherein said table comprises
3 priority information regarding said aperiodic data.

1 19. The network of Claim 18, wherein said priority information comprises data
2 block size and type of data, wherein said type of data comprises isochronous
3 and asynchronous data.

1 20. The network of Claim 18, wherein said aperiodic data is transmittable from
2 a first module to another first module or a second module in the network.

1 21. The network of Claim 18, wherein said aperiodic data from at least one of
2 said first and second modules comprises a bandwidth, wherein said bandwidth is
3 guaranteed transmission on said network.

22.5

1 A method of transmitting both periodic and aperiodic data in a network
2 system comprising a network databus with a plurality of Network Interface
3 Controller (NIC) modules arranged to communicate said data over said network
4 databus, at least some of said data arriving from a plurality of devices coupled to
5 said NIC modules through a signal backplane, wherein at least one of said NIC
6 modules acts as a master timing NIC module responsible for allocating
7 bandwidth on said network databus, said method comprising the steps of:

8 transmitting all periodic data on said network databus;

9 transmitting requests to said master timing NIC module for transmission of
10 aperiodic data;

11 processing said requests by assigning bandwidth according to priority and
12 availability of bandwidth on said network databus after transmission of said
13 periodic data;

14 transmitting a status message to said plurality of NIC modules, said status
15 message indicating what requests are assigned bandwidth on said network
16 databus for transmission of aperiodic data and order of transmission; and

17 transmitting said aperiodic data over said network databus according to
18 said order of transmission.

1 23. The method of Claim 22, wherein said step of processing said requests
2 includes the step of guaranteeing a certain amount of bandwidth to at least one
3 of said requests.

*Sub
Cl*

1 24. The method of Claim 22 wherein each of said plurality of NIC modules
2 includes a priority table, and further comprising the steps of:
3 transmitting the status message to each of said NIC modules; and
4 storing indicators in said priority tables as to what requests were assigned
5 bandwidth on said network databus for transmission of aperiodic data and order
6 of transmission